

fisheries management, other data needs (socioeconomic, environmental) are beyond the scope of this study. Data needed for stock assessments are well defined (Gulland 1966, 1969, 1983; Ricker 1975, Caddy and Bazigos 1985, Pauly 1984). The data needs vary slightly among species, and specific differences are taken into account when identifying the data availability and gaps later in this report. The basic data needs for stock assessments are identified by the following categories:

- I. Stock Identification
- II. Catch (landings, effort, and biological samples)
  - A. Commercial
  - B. Recreational
  - C. Bycatch
- III. Fishery-Independent Surveys
  - A. Juvenile
  - B. Adult
- IV. Life History
  - A. Mortality (natural, fishing, total)
  - B. Reproductive Parameters (fecundity, age at maturity)
  - C. Age and Growth
  - D. Movements and Migration

**Stock Identification** - Managers must be able to identify the group of fish that is being affected or which management practices will affect. A common problem is that fisheries data are used to calculate population parameters without considering if the species effectively constitutes a unit stock (Gulland 1983). The assumption of one stock is invalid, if in actuality, a fishery is based on several stocks or only part of a stock.

Many times a combination of data sources are needed to identify a stock adequately. Methods to examine possible stock separation include (Gulland 1983):

1. Distribution of fishing
2. Spawning areas
3. Values of population parameters